

Appl. No.: 09/614,784
Amdt. dated: October 6, 2003
Reply dated: April 22, 2004

Attorney's Docket 7146.0075

REMARKS / ARGUMENTS

The abstract has been amended.

The Examiner made objections to the claims. The claims have been amended to overcome the objections.

The Examiner rejected claims 1-16 as being anticipated by Harada et al., U.S. Patent No. 6,115,435.

Harada et al., U.S. Patent Number 6,115,435, disclose a method of demodulating a multi-level signal. The technique includes using a set of constellation vectors proximate to the multilevel signal to assign value to bits. See, Figure 4. In the case of two constellation vectors having two values which are the same and another value which differs, such as point "c" of Figure 4, the technique teaches that the value of the variable value at point "c" is assigned based upon its closest value. See, Figure 7.

Claim 1 patentably distinguishes over Harada et al. by claiming a reliability measure for at least one other the bit of the demodulated signal if the other bit occupies a bit position corresponding to a bit position of at least two proximate constellation vectors occupied by a bit of varying value, wherein the reliability measure is based upon a measure of the center of gravity of the signal constellation vectors.

At most Harada et al. disclose that the x - y axes illustrated in Figure 5 cross in the central region of the neighborhood. This merely defines a set of values to be used for defining the reliability measure. Accordingly, Harada et al. fail to disclose, nor even suggest, that the reliability measure is based upon a measure of the center of gravity of the constellation vectors.

Claims 2-4 depend from claim 1 and are patentable for the same reasons asserted for claim 1.

Claim 5 patentably distinguishes over Harada et al. by determining a measure of a center of gravity of the neighborhood.

At most Harada et al. disclose that the x - y axes illustrated in Figure 5 cross in the central region of the neighborhood. This merely defines a set of values to be used for defining the reliability measure. Accordingly, Harada et al. fail to disclose, nor even suggest,

that the reliability measure is based upon a measure of the center of gravity of the constellation vectors.

Claims 6-9 depend from claim 5 and are patentable for the same reasons asserted for claim 5.

Claim 10 patentably distinguishes over Harada et al. by determining a measure of a center of gravity of the neighborhood.

At most Harada et al. disclose that the x - y axes illustrated in Figure 5 cross in the central region of the neighborhood. This merely defines a set of values to be used for defining the reliability measure. Accordingly, Harada et al. fail to disclose, nor even suggest, that the reliability measure is based upon a measure of the center of gravity of the constellation vectors.

Claims 11-16 depend from claim 10 and are patentable for the same reasons asserted for claim 10.

Claim 17 patentably distinguishes over Harada et al. in view of Viterbi et al. by claiming identifying at least one signal constellation vector proximate to the multilevel signal and comparing a reliability of at least two bits of the constellation vector of the demodulated multilevel signal, assigning a hard decision value to a bit associated with a greater reliability, assigning a soft decision value to a bit associated with a lesser reliability.

Harada et al. fail to disclose the assignment of the hard decision value and the soft decision value based upon a degree of reliability. The applicant would note that Viterbi et al. disclose one of a multitude of convolutional coded or turbo coded bitstreams, which presumably would operate on a bitstream of hard decision values and soft decision values. However, there is no suggestion in Harada et al. to assign the hard decision value and the soft decision value based upon a degree of reliability, and so accordingly the combination of Viterbi et al. likewise fails to disclose such a combination.

Claims 18-22 depend from claim 17 and are patentable for the same reasons asserted for claim 17.

Claim 23 patentably distinguishes over Viterbi et al. by claiming identifying at least one signal constellation vector proximate to the multilevel signal, limiting a measure of reliability of the constellation vector to a predetermined range, and providing a soft decision value to bits

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of the demodulated multilevel signal associated a measure of reliability having values not exceeding a limiting value of the range.

Claims 24 and 25 depend from claim 23 and are patentable for the same reasons asserted for claim 23.

The applicant respectfully requests that a timely Notice of Allowance be issued in this case. If the Examiner believes that for any reason direct contact with applicant's attorney would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the number below.

Respectfully submitted,
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